Yosemite Short Haul Plan
10/06/04

INTRODUCTION

Versions of helicopter short-haul have been used for many years in Europe as an effective method of rescue in mountainous areas. In 1970, National Parks Canada incorporated the technique into their search and rescue program and has been using it successfully ever since. The development of the short-haul technique in this country has been closely associated with the historical development of helicopter rappelling.

PROGRAM DEFINTION

Short-haul: To transport one or more persons externally by helicopter suspended below a helicopter.

PROGRAM JUSTIFICATION

The use of the helicopter short-haul technique has a number of advantages over more conventional means of search and rescue. The short-haul procedure greatly decreases the evacuation time of an injured person from the backcountry to an advanced medical care facility. Furthermore, the technique eliminates (assuming the presence of adequate flying conditions and the availability of an OAS approved pilot and helicopter) the occasional need for lengthy evacuations over technical terrain. The subsequent savings in time and wear and tear on rescue personnel will reduce the overall hazard to the SAR team and to the patient(s). Helicopter short-haul has enhanced the overall safety of SAR operations in Yosemite. Since the inception of this program a number of lives have been saved through the use of this technique and mountain rescue in Yosemite has, to a certain degree, been revolutionized.

> **NOTE:** **It is imperative that everyone involved in short haul understand how instantaneous an in-flight emergency can occur. Release of the short line is not an operational consideration while human external cargo (HEC) is attached beneath the aircraft. A Jettison of short haul personnel or patients while suspended off the ground in flight will not be conducted. In case of an emergency the pilot will conduct a landing (e.g. autorotation) in these conditions with human cargo on the line. The purpose of being able to release the short haul anchor point and line is intended for a situation involving line entanglement only. The mental choice by any short hauler to cut away from the line is a personal decision depending on the exact circumstances and best chance for survival. Short haul operations are inherently hazardous and could be fatal. This must be discussed in detail during program training, re-currency and mission briefings.**

GENERAL OPERATIONAL GUIDELINES

All short-haul operations conducted by cooperator aircraft and civilian contract will follow the requirements of Aviation Management policy (DO-60, RM-60), the Yosemite Park Aviation Management Plan, The Helicopter Short-Haul Handbook, Interagency Helicopter Operations Guide, and the Departmental Manual 350-354. The most restrictive policy will be followed.

Short Haul techniques may be used in search and rescue emergencies, firefighting and law enforcement incidents when public safety and employee safety are prescribed by mission requirements. Use of this technique includes incidents within the Park and surrounding mutual aid response zones for SAR, law enforcement and fire incidents. Short Haul technique may also be considered for use in other circumstances not specified if the circumstances indicate that Short Haul would be the safest and/or most reasonable way to proceed.

Helicopter short-haul insertion may be used when an operational site cannot be readily and quickly accessed by ground approach or conventional helicopter landing. Factors such as the duration and difficulty of a conventional evacuation or operation, personnel safety, patient safety and possible medical complications, transport time to a definitive care facility, weather (past, present and predicted), locations and manpower availability should be considered. Demonstrations for public relations purposes will be regarded as a training opportunity and are permissible with the Chief Ranger's prior approval.

The following guidelines should be adhered to when thinking of delivery of personnel via a helicopter:

1. Can the aircraft land within a reasonable walking distance from the operations site? If not go to 2.
2. Short haul insertion should be considered the last resort to deliver personnel to the operations site due to the exposure of rescue personnel suspended underneath the helicopter.

SAR, fire and Law Enforcement personnel who have received insertion training will be allowed to use this technique. In rare cases, essential mission personnel (such as dog handlers or doctors), not trained in insertion, may utilize this technique. The IC and senior park aviation managers will approve this prior to the activity. In these cases, the untrained person will only be allowed to go with a trained person. One or two personnel may be inserted at the same time, based on specific site factors and helicopter load calculations.

The closest available safe helispot to the identified incident site will be used as the staging area for initial pickup of insertion personnel. On any mission where the incident scene meets operational guidelines, the IC may consider the use of helicopter insertion to deploy the initial response team. Additional personnel may then also be deployed via insertion if it is the safest and most prudent handling of the operation. The IC will

consult with other appropriate mission management personnel, prior reaching this decision.

The spotter and pilot will make the final decision based on, capabilities/limitations of aircraft, climatic conditions and if the mission follows policies and guidelines. During SAR missions a litter attendant will only be used if pilot's load calculation shows that there is an adequate power margin to lift and carry the additional weight. All short-haul operations will be conducted in accordance with the attached short-haul procedures.

Pilots and Aircraft:

Only pilots and aircraft specifically carded or under a Memorandum of Understanding (MOU) by OAS will be utilized for these missions. Also cooperator organizations must have a current MOU on file with OAS and an Operating Plan with Yosemite National Park. The spotter and pilot must have a minimum of two practice short-haul evolutions together before conducting an actual mission.

Mission Briefing

The Incident Commander or designee prior to any short-haul activities shall conduct a briefing. The briefing should be an open discussion with all aircrew members involved with the mission. As a minimum, the following shall be addressed: (See Appendix 1)

- Organization (IC, Ops, Staging Area Manager)
- Previous Events
- Current Situation
- Climatic Conditions, Current and Predicted (Weather, Day Light)
- Incident Objectives
- Priorities
- Assignments
- Communications
- Safety
- Questions

Each mission will have a designated ICS qualified Helicopter Manager and Incident Commander.

NOTE: Risk assessment will be documented prior to the operation and will be an on going process through out the operation. (See Appendix 2)

Performance Planning:

The pilot in command is required to do performance planning (OAS-67, Load Calculation) prior to any short-haul operation.

Reconnaissance Check Flight:

Prior to conducting an actual short-haul the IC will insure that all other options to carry out the mission and risks have been weighed.

The pilot and spotter will fly to the operation scene to ascertain the short-haul site's characteristics: rotor clearance, wind conditions, slope, and aerial hazards. The pilot will perform a hover power check and the spotter will record the following: outside air temperature (OAT), Torque and Pressure altitude. During the recon, a secondary drop-off site will be identified and selected. If trained personnel are already on site, they should assist with the gathering of this pertinent information.

Flight Restrictions:

- Type II helicopters are precluded from performing Special Use missions when winds exceed 40 knots or when gust spreads exceeds 15 knots.

- Flight operations and procedures shall be conducted from ½ hour before official sunrise and ½ hour after official sunset. Visibility for short-haul missions shall be a minimum of ½ mile.

- Aircraft must have adequate rotor clearance.

- Maximum air speed will not exceed 60 knots during a short-haul.

Personal Protective Equipment:

Spotter (s)

Personnel flying on board the aircraft must have the following personal protective equipment (PPE): Approved helmet (SPH-4 or SPH-5), fire resistant clothing, spotter's tether harness, eye protection, leather or Nomex gloves, and all leather boots which extend above the ankle.

Short Haulers

Short haul personnel are required to have an approved helmet (SPH-4, SPH-5, or UIAA approved climbing helmet), fire resistant clothing, leather boots, leather or nomex gloves, hearing protection, eye protection, and commercially made climbing harness (UIAA or NFPA approved).

Ground Personnel

Ground rescue personnel that are hooking the litter to the rope and catch team must wear the following: helmet, eye protection, ear protection, and leather gloves.

There are special SAR, fire and law enforcement operations that may occasionally require PPE deviations. These will be addressed on an incident-by-incident basis and must follow current PPE waivers.

See Helicopter Short-Haul Handbook (page 7) for discretionary authorization for deviation form PPE requirements.

DOCUMENTAION

The spotter will keep documentation current. All training and actual mission use will be included in this documentation process. Training will be tracked in order to ensure that personnel fulfill all re-certification and proficiency requirements. The history of short-haul ropes and associated hardware will also be tracked. Each time a rope is used, the use will be logged.

A Risk Assessment form (Appendix 2) will be a joint effort between IC, spotter, and pilot. This form will be completed prior to the mission. It is a tool to assist in the decision making process of a “Go” or “No Go” decision. Risk assessment will be on going through out the operation.

EQUIPMENT

Shorthaul personnel will maintain a logbook on all equipment used in shorthaul operations and will track the individual runs that personnel participate on. The log will track the type of equipment, manufacturer, date manufactured or placed into service and the operational uses of the equipment. All textile materials shall be retired from service after five years in service.

OAS will approve all equipment utilized for this program. Any additional equipment will need to go through the approval process. Below is a list of equipment that will be utilized by this program.

Para-Gear Yoke Band	Rated Capacity
Type 7 Webbing	6000 lbs.

Angled D-Ring	5000 lbs.
D-Ring	5000 lbs.
Butterfly Snap	5000 lbs.
Three Ring Release	5000 lbs.
½ inch diameter Kernmantle static	Rated Capacity
Ropes in 100, 150 and 250 foot lengths	8,000 lbs
Attachment Rings	5,000 lbs.
Springloaded gate Carabiners	5,500 lbs.
Omini Slings	4,600 lbs.

Applying a 10:1 safety factor to the weakest component (Rope Attachment Rings) this would give the park's short haul anchor system a useful load of 500 lbs

SHORT-HAUL PERSONNEL QUALIFICATIONS AND REQUIREMENTS

The positions of pilot check spotter, spotter, spotter trainee and short-hauler will comply with the initial qualification, annual re-qualification and proficiency requirements as outlined in the Helicopter Short-Haul Handbook. These positions and their associated requirements are listed below.

Pilot Requirements:

- Pilots shall be qualified in accordance with 14 CFR 133 for Class A and B external load operations.
- 50 hours Pilot-In-Command (PIC in make and model.
- 25 hours total time in vertical reference experience within the last 12 months, requiring precision placement.
- Be carded for long-line operations.
- Attend an OAS approved short-haul training session.
- Understand short-haul techniques, short-haul spotter signals and other operational concerns.
- Demonstrated ability to pilot the helicopter during a series of short-hauls in terrain that occur in Yosemite National Park.
- Demonstrated ability to work with the short-haul spotter.
- The pilot shall successfully complete the Short-haul Pilot Proficiency Test contained in the DOI Flight Check Guide (available upon request from OAS).

Check Spotter

Yosemite's Helicopter Operation Specialist and the Regional Aviation Officer will designate a check spotter. The minimum training requirements are:

- Must have been a qualified spotter for two years.

- Must have assisted in training at least two spotters.

Initial Spotter or Spotter Trainee

- Successfully complete Interagency Helicopter Training or Basic Helicopter Safety course presented by OAS approved personnel.
- Current Helicopter Manager (Project or Fire)
- Under the supervision of a qualified check spotter, the initial spotter or trainee shall:
  1) Demonstrate knowledge of inspection, care and maintenance of short-haul equipment.
  2) Demonstrate ability to rig helicopter for short-haul, provide safety briefing and perform safety check of short-haul personnel without procedural error.
  3) Demonstrate knowledge of emergency procedures.
  4) Spot six loads of short-haul personnel (two in typical terrain), four loads of cargo (e.g. a rescue litter) without procedural error.
  5) Demonstrate ability to work with the pilot.
  6) Demonstrate knowledge of risk assessment and mission structure.

NOTE: The spotter must perform all spotter duties. At the discretion of the Check Spotter, the Trainee Spotter maybe required to more than the minimum.

Initial Short-Hauler

- Successfully complete Interagency Helicopter Training (S-271).
- Demonstrate knowledge of care and maintenance of short-haul equipment and rigging.
- Demonstrate knowledge of short-haul procedures.
- Demonstrate knowledge of emergency procedures.
- Complete a minimum of two short-hauls without procedural error. Training will be in typical terrain and will include receiving cargo.

NOTE: A check spotter may require additional training to develop or improve efficiency. The spotter will determine if short-haul training is to be accomplished in typical terrain, confined areas, or vertical rock faces.

ANNUAL REQUALIFICATION REQUIREMENTS

The pilot and all short-haul personnel shall attend operational training and complete the following requirements to the satisfaction of the check spotter. If a spotter exceeds 90 days since re-qualification, it will be the decision of the check spotter to re-qualify.

The check spotter may require additional training based upon the complexity of the program, or for individuals needing more instruction. If a person cannot meet minimum requirements, the check spotter shall not qualify the individual for short-haul operations.

All short haul personnel (including pilot)

- Participate in helicopter safety refresher training.
- Review and discuss local Operations Plan and emergency procedures.
- Review previous short-haul mishaps.
- Familiarize and review the helicopter procurement document (Exclusive Use Contract).

Pilot

- Demonstrate ability to short-haul in typical terrain.
- The pilot shall successfully complete the Short-haul Pilot Proficiency Test contained in the DOI Flight Check Guide (available upon request from OAS).

Spotter

- Participate and assist in annual short-haul recurrence training.
- Demonstrate knowledge of short-haul procedures and spotter responsibilities to the check spotter without error.
- Complete four (4) short-hauls to the satisfaction of the check spotter. If applicable, four cargo let down loads shall be deployed without error to the satisfaction of the check spotter.

Short-Hauler

- Demonstrate knowledge of short-haul procedures without error.
- Complete at least two (2) helicopter short-hauls without error.

PROFICIENCY REQUIREMENTS

It will be the responsibility of the check spotter to determine the frequency of proficiency short-hauls for all personnel, including the pilot. In no case will the proficiency period exceed 90 days. The check spotter may require additional training based upon the complexity of the program, or for individuals needing more instruction. If a person cannot meet minimum requirements, the check spotter shall not qualify the individual for short-haul operations.

Pilot

The pilot shall perform at least one proficiency short-haul within 90 days of the last short-haul to the satisfaction of the check spotter. The check spotter may request the pilot to demonstrate the ability for precision placement in typical terrain on a more frequent basis.

Spotter

The spotter shall accomplish at least one proficiency short-haul within 90 days of the last short-haul to the satisfaction of the check spotter.

Short-Haulers

Short-haulers shall accomplish at least one proficiency short-haul within 90 days of the last short-haul to the satisfaction of the spotter.

HELICOPTER SHORT-HAUL PROCEDURES
Bell 205 and 212 Helicopter Series.

Logistics Phase

Decision is made by the IC of how to get personnel to the operations site based on information received, either by ground, helicopter, helicopter rappel, or short-haul.

If the choice is to fly in personnel or rappel in, the IC will notify the District Ranger or their acting and they call the Park ECC to order a helicopter to assist with an operation.

The IC should be in contact with the aviation staff at the helibase to provide input to aviation portion of the operation.

Operational Phase

Operations and procedures shall comply with the Departmental Manual, agency aviation policy, the procurement document, and the user-specific Short-haul Operations Plan. All flight operations have a certain inherent degree of risk associated with them. Training and the judicious use of available resources, including helicopters, can help reduce the degree of risk associated with a particular mission. Risk assessment and the fact that it must be an on-going process during an operation are vitally important to a short-haul program. Risk assessment is the subjective analysis of physical hazards and operational procedures used to arrive at a GO/NO-GO decision. Risk assessments support informed GO/NO-GO decisions, which are the responsibility of line management. The pilot retains final authority for a GO/NO-GO decision when safe operation of the aircraft is a factor. (352 DM 1, Aviation Safety; 1.9, A.)

A spotter will be in the aircraft during all short-haul operations.

Helicopter Load Calculations

A helicopter load calculation will be completed by the pilot and reviewed by the spotter, and/or helicopter manager**,** for every mission.

Flight Restrictions.

- Flight operations and procedures, including short-haul, shall be conducted from 1/2 hour before official sunrise until 1/2 hour after official sunset. Additionally, hand signals from the short-haulers, ground crew, and the aircrew must be clearly visible.

- Visibility for short-haul missions shall be a minimum of 1/2 mile.

- **NOTE:** Life threatening emergencies as determined by local management may prompt deviation from the Departmental Manual and/or the Short-haul Handbook. In such an event, thorough documentation and submittal of a SAFECOM is required. The loss-benefit value of deviation should be carefully assessed through risk management procedures.

Mission Briefing

A briefing shall be provided by appropriate incident managers and/or the spotter prior to short-haul operations and should include the pilot and, to the greatest degree possible, all persons involved in the operation.

As a minimum, the following shall be addressed during the mission briefing:

- Risk Assessment
- Nature of the Mission
- Location
- Terrain
- Weather
- Landing Areas
- Individual Responsibilities
- Cargo Let-Down procedures (if applicable)
- Hazards
- Safety Considerations
- Emergency Procedures
- Situational Awareness Review

NOTE: Risk assessment is an on-going process, to be applied throughout the operation.

Personnel and Helicopter Equipment Checks.

Safety Check

Each individual will check themselves and their partner before operations commence. Inspection will work from head to toe and will adapt to specific equipment used.

- Helmet properly fitted, chin strap fastened.
- Eye protection secured.
- Fire resistant clothing properly worn.
- Collar up (fire shirt) flight suit completely zipped. Loose items around neck tucked into clothing.
- Radio operational.
- Sleeves down and secured over gloves.
- Gloves on.
- Harness properly fitted, buckles correctly fastened, no twists, loose straps secured (double-check on follow-through buckles). Two separate points of attachment are properly secured to harness and locking carabiners are functional.
- Knife easily accessible and secured.
- ALSE approved footwear.
- Pants or flight suit should be long enough to cover top of boots while in seated position.

Helicopter Equipment Check

The pilot, spotter, and short-haulers will complete the following checklist (may vary with different type aircraft):

- Cargo--Remove items not essential to the mission.
- Cabin Configuration--As directed by the pilot, monitor adjustments as the cabin is configured for short-haul.
- Anchor and release system are installed correctly, tested and secure.
- Short-haul Rope is correctly attached to primary anchor and back-up**.**
- Line and brake device is available for cargo let-down.
- Cargo is secured but accessible.
- Spotter anchor attachment is secure.
- Seat Belts are secured and operational.
- Maps and mission information is secured but accessible.
- Communications check - All radios are operational and on correct frequencies. (A radio check should be done to establish communications between the aircraft and appropriate short-haul personnel, including pilot, spotter, short-haulers, and ground crew members.)
- Intercom System Operational. Due to other air traffic or ground personnel attempting to make radio contact, use of the hot-mike is not recommended.
- Spotter check….PPE, harness, point of attachment.

Pilot/Spotter Duties (Reconnaissance Check Flight)

The following in-flight duties are accomplished by the air crew; pilot-spotter coordination is essential to safe and effective operations.

Flight-following is required. The spotter will assist with navigation and be alert to hazards (utilize hazard map, watch for other aircraft, clearances, wires, changing conditions, etc.)

Evaluate and select short-haul insertion/extraction sites (when possible, seek input from short-haulers.) and staging sites, if necessary**.**

Short-haul insertion/extraction sites should be evaluated for the following:

- Proximity to incident (if insertion/extraction site is not at the incident site)
- Approximate size
- Slope
- Rotor clearance
- Wind conditions
- Ground/aerial hazards
- Approach and departure routes
- Non-incident personnel in the area

Complete a hover check, power available, and assess for a Go/No-Go decision. Select a landing area. Aircraft lands to rig for short-haul.

Spotter Duties (Landing Area)

After landing, the spotter is responsible for preparing for the short-haul.

- Spotter inspects short-haul equipment and rigging.
- Aircraft doors positioned for the mission.
- Loose equipment is secured or removed from cabin.
- Radio frequency should be cleared before starting short-haul.
- Any additional crew briefing should be done at this time. This may include: hazards spotted situational changes; additional pilot requests/cautions; possible cargo deployments, etc.
- Complete a communications check (radio and/or hand signals) between pilot, spotter, and/or short-haulers as applicable.
- Complete a spotter equipment and anchor check.

- Repeat buddy check.

Short-hauler/Spotter Duties (Preparation for Insertion)

During the lift-off and preparing for the insertion it is important that the short-haulers communicate to the pilot and spotter what is occurring on the end of the line.

- Short-haulers remain a safe distance from the helicopter.
- Helicopter lifts off and establishes hover.
- Pilot checks power, gives “O.K.” to proceed.
- Spotter states “Hooking up short-haul, pilot responds “O.K.” or “No”. If pilot responds “No”, spotter and pilot will reassess situation and take appropriate action.
- Short-haulers attach to short-haul rope on command.
- **NOTE**: If multiple short-haulers, one should be responsible for communications and the other for tending to the short-haul rope.
- Short-haulers give "ready" signal.
- Pilot lifts short-haulers and flies to short-haul site. Spotter monitors short-haulers during transport. Prior to insertion, pilot will do a final power assurance check.
- Upon arrival at the short-haul site the short-hauler may assist with vertical reference; e.g.” two-zero feet, one-zero feet, on the ground” as the pilot delivers the load in a controlled fashion.
- Once on the ground**,** sufficient time should be allowed for the short-haulers to stabilize and secure themselves prior to disconnecting from the short-haul line. Short-haulers communicate to pilot and/or spotter when they are ready to unhook**.**
- When directed by the pilot and/or spotter, short-haulers unhook from short-haul rope and signal when they are clear.
- The helicopter departs the short-haul site and returns when requested.

Short-hauler Duties (Extraction and Transport)

It is critical to maintain communications between personnel on the ground and the pilot, and the short-hauler and/or victim during extraction.

- At the short-haul extraction site, prior to extraction:
- Communicate any pertinent new information to the helicopter crew
- Situational changes.
- Newly discovered hazards, etc.
- Move unnecessary people (e.g., victim's party, etc.) away.
- Short-haulers and/or victim are attached to short-haul lines on command.
- Short-haulers give "ready" signal.
- Pilot lifts short-haulers**,** clears obstacles**,** and flies to landing area. Spotter keeps view of short-haulers during transport.
- Short-hauler may assist pilot with vertical reference to the ground, e.g. "two zero feet, one zero feet, on the ground."
- Once short-haulers are stable and secure, and after they receive direction from the pilot or spotter to unhook, they do so and signal when they are clear.
- The helicopter lands and personnel and/or victim are loaded inside the helicopter for extended flight.

NOTE: Following any training exercise or an actual mission, consideration should be made to conduct a "hot debrief." Research has found that this is a key ingredient of many successful teams. The hot debrief conducted immediately following the mission can meet the following objectives:

- Provide feedback to involved personnel.
- Identify areas of concern for follow-up.
- Reinforce lesson learned.

Administrative Duties

The spotter and/or check spotter shall be responsible for completing documentation relating to short-haul activities.

The spotter shall have sufficient training, qualifications, and experience to accomplish the following duties and responsibilities:

- Contractual problems are communicated to appropriate personnel (helicopter manager, project inspector, COAR, etc.)

- SafeCom completed when necessary.

The Check Spotter will be responsible for coordinating the following activities:

- Monitor currency of short-haul personnel and schedule training as needed.

- Assure that short-haul logbooks for personnel and equipment are current.

EMERGENCY PROCEDURES

Preplanning for emergency procedures is a critical component of risk management. Accordingly, each short-haul program must evaluate and discuss, in depth, the variety of potential scenarios and actions that may best mitigate any unplanned event. Training for effective "cockpit resource management" should be a part of this process.

It is imperative that everyone involved in short-haul understand how instantaneous an in-flight emergency can occur. **Release of the sort-haul line is not an operational consideration while human external cargo (HEC) is attached beneath the aircraft. The short-haul line will not be jettisoned. The only exception is line entanglement, or the probability that this may happen. In case of an aircraft emergency, the pilot will conduct a landing (e.g. autorotation) with HEC attached to the short-haul line. The choice by any short-hauler to cut away from the line is a personal decision depending on the circumstances and best chance for survival.**

Examples of formalized emergency planning procedures are outlined below.

Helicopter In-Hover, Control and Power Maintained
Examples: Caution indicator or chip light on, gradual loss of oil pressure, etc.

The pilot may decide to:

- Notify the spotter and short-haul personnel and set them on the ground as soon as possible.

- Continue with the flight and notify the spotter and short-haulers that a precautionary landing will occur as soon as a suitable landing area is found.

On the ground, personnel rapidly unhook or cut lines and seek protection.

Helicopter Loss of Control or Power, Engine Failure
Examples: Loss of tail rotor authority, transmission failure, compressor stall, engine failure, hydraulic boost pump failure, etc.

The pilot will:

- Declare the emergency to the spotter and short-haulers.
- Attempt to get short-haulers on the ground. Short-haulers will rapidly unhook or cut lines and seek protection.
- Attempt to maneuver helicopter away from personnel on the ground.

Short-Haul Line Entanglement

In the event of possible line entanglement, the pilot may decide it necessary to release the line.

- Pilot will notify the spotter that line may be released.
- Ground personnel will be notified by radio or hand signals that the line will be released.
- Pilot will lower helicopter, if possible, to take tension off of rope.
- Spotter will release the back-up system (Belly Band) and make sure it is clear of the helicopter skids.
- Pilot will release primary system (Cargo Hook).

NOTE: Again, it is imperative that potential emergency scenarios, actions and reactions likely required of all involved personnel are discussed as thoroughly as possible prior to flight.

"Takeoffs are optional, landings are mandatory!"

SPOTTER HAND SIGNALS

Short-hauler's Hook Up

Short-hauler's Unhook

Wave-off – Don't Hook Up!

SHORT-HAULER HAND SIGNALS

MOVE UPWARD

MOVE DOWNWARD

HOLD HOVER

MOVE FORWARD

WAVE-OFF/DON'T LAND

OKAY

CONNECT

DISCONNECT

Signatures

Recommended by:

_____ _____
Keith Lober Date
Search and Rescue Manager

Recommended by:

_____ _____
Robert Reece Date
Park Aviation Manager

Recommended by:

_____ _____
Cameron Sholly Date
Deputy Chief of Operations

Approved by:

_____ _____
Stephen J. Shackelton Date
Chief Ranger

Approved by:

_____ _____
Michael J. Tollefson Date
Superintendent